This document gives pertinent information concerning the issuance of the VPDES Permit listed below. This permit is being processed as a Minor, Industrial permit. The non-contact cooling water discharge results from the operation of a plastic film and sheeting operation. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Mailing Address: Klockner Pentaplast of America, P.O. Box 500, Gordonsville, VA 22942 — SIC Code: 3081

   Facility Location: 3585 Klockner Road — County: Louisa

   Facility Contact Name: Darrell McClain — Telephone Number: 540-832-1416

2. Permit No.: VA0092533 — Expiration Date of previous permit: N/A New Issuance

   Other VPDES Permits associated with this facility: VAR050848 - Storm Water Industrial General Permit

   Other Permits associated with this facility: None.

   E2/E3/E4 Status: N/A

3. Owner Name: Klockner Pentaplast of America, Inc.

   Owner Contact/Title: Darrell McClain/Eng. & Maintenance Director — Telephone Number: 540-832-1416

4. Application Complete Date: August 20, 2009

   Permit Drafted By: Susan Oakes — Date Drafted: September 15, 2009

   Draft Permit Reviewed By: Alison Thompson — Date Reviewed: November 19-20, 2009

   Public Comment Period: Start Date: December 25, 2009 — End Date: January 23, 2010

5. Receiving Waters Information: Outfall 001

Receiving Stream Name:	South Anna, UT		
Drainage Area at Outfall:	0.25 sq.mi./162 acres	River Mile:	0.26
Stream Basin:	York	Subbasin:	York
Section:	3c	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-F01R
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD
303(d) Listed:	No	30Q10 Flow:	0.0 MGD
TMDL Approved:	No	Date TMDL Approved:	N/A

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

   - ✓ State Water Control Law
   - ✓ Clean Water Act
   - ✓ VPDES Permit Regulation
   - ✓ EPA NPDES Regulation
   - ✓ EPA Guidelines
   - ✓ Water Quality Standards
   - ___ Other

7. Licensed Operator Requirements: None

8. Reliability Class: N/A Industrial Discharge

9. Permit Characterization:

✓	Private		Effluent Limited		Possible Interstate Effect
	Federal	✓	Water Quality Limited	✓	Compliance Schedule Required
	State		Toxics Monitoring Program Required	✓	Interim Limits in Permit
	POTW		Pretreatment Program Required		Interim Limits in Other Document
	TMDL				

10. Wastewater Sources and Treatment Description:

Klockner Pentaplast of America (Klockner) manufactures plastic film and sheeting for a variety of packaging applications. The facility has eight cooling towers, four of which are for non-contact process water. The other four cooling towers provide cooling water for comfort cooling chillers. The water used for cooling purposes and potable water at the facility is obtained from two groundwater wells located on the property and used on an alternating monthly basis. The well water is pumped to a 10,000-gallon storage tank. The water is softened via a dual water softening system and also treated using Bond 5008 to prevent excessive scaling and solids buildup in the cooling systems. The four chillers that are strictly used for air conditioning, are used seasonally from March to October. The cooling towers are cleaned out generally twice a year in the fall and spring. The maximum daily discharge flow from the cooling towers is estimated at 0.0058 MGD. Non-contact cooling water blowdown is discharged to a 1,000-gallon storage tank in the basement. When the tank level reaches a certain point, the non-contact cooling wastewater is discharged to Outfall 001. Outfall 001 mixes with stormwater making its way via the culvert pipe to the UT before travelling approximately 1,200 feet to the South Anna River.

Sampling occurs at the 1,000-gallon storage tank; however, will be moved to Out fall 001 as it was learned during the site inspection that the discharge for cooling towers eight and nine discharged directly to Outfall 001 and was not part of the sampling at the storage tank.

The facility was originally covered under the General VPDES Permit for Cooling Water Discharges; however, evaluation of the metals data from the 2003 – 2008 permit cycle showed that copper and zinc concentrations in the discharge have the reasonable potential to exceed the state water quality criterion and; therefore, Klockner is no longer eligible for coverage under the general permit. In discussions with Klockner, the facility plans to evaluate its metals concentrations. DEQ will include a compliance schedule in this permit issuance for the metals evaluation. As part of the evaluation process, Klockner is proposing the following: 1) continue work on the action plan developed by their engineering consultant to evaluate the metals concentrations; 2) evaluate relocating the outfall directly to the South Anna River; 3) installing a closed-loop system; 4) hooking up to the Gordonsville STP; or 5) reducing the metals concentrations to comply with state water quality criterion thereby becoming eligible again to obtain coverage under the general permit.

Klockner also has a Storm Water Industrial General Permit (VAR050848).

See **Attachment 1** for the NPDES Permit Rating Worksheet.
See **Attachment 2** for a facility schematic/diagram.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Average/Max Daily Flow	Outfall Latitude and Longitude
001	Non-contact Cooling Water	See Item 10 above.	0.0038 MGD – avg. 0.0058 MGD - max	**38° 07' 0.20"** N **78° 12' 0.40"** W
See **Attachment 3** for Boswells Tavern, DEQ #172C topographic map.				

11. Sludge Treatment and Disposal Methods:
The facility generates non-contact cooling water from process heating equipment and comfort cooling chillers. The facility does not produce sewage sludge and does not treat domestic sewage.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2	
VA0021105	Gordonsville Sewage Treatment Plant (River Mile 0.23)
8-SAR097.82	DEQ Ambient and Biological Monitoring Station at the Rt. 603 bridge crossing on the South Anna River approx. 2.4 river miles downstream of Outfall 001
8-SAR101.03	Ambient Monitoring Station at Route 231.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Bond 5008 (Dispersant & Corrosion Inhibitor)	55-gallon drum	Stored in Boiler Room
Bond 5008 (Dispersant & Corrosion Inhibitor)	55-gallon drum	Stored in Cooling Tower Bldg.

14. Site Inspection: Performed by Susan Oakes on August 27, 2009 (see **Attachment 4**).

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data
There is no monitoring data for the South Anna River, UT. The unnamed tributary flows into the South Anna River. The nearest downstream DEQ monitoring station is 8-SAR097.82, located at the Rt. 603 bridge crossing on the South Anna River, approximately 2.4 river miles downstream from Outfall 001. This station is contained in segment VAN-F01R_SAR02A02, which begins at the headwaters of the South Anna River and continues downstream until the confluence with Dove Fork.

The unnamed tributary is not on the current 303(d) list; however, there are several segments on the South Anna River that are listed as impaired.

The following segments have been listed as not supporting the recreation use:

1. VAN-F01R_SAR02A02, which begins at the headwaters of the South Anna River and continues downstream until the confluence with Dove Fork. Sufficient excursions from the instantaneous *E. coli* bacteria criterion (9 of 17 samples - 52.9%) were recorded at DEQ's ambient water quality monitoring station (8-SAR097.82) at the Route 603 crossing to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment. The segment was previously listed for a fecal coliform bacteria impairment, from 2002 through 2004. The *E. coli* bacteria impairment was first listed in 2006.

2. VAN-F01R_SAR01A02, which begins at the confluence with Dove Fork and continues downstream until the mouth of waterbody F01, at the confluence of Wheeler Creek to the South Anna River. The following assessment is carried over from the 2006 report, as no *E. coli* monitoring has been collected: Sufficient exceedances of the instantaneous fecal coliform bacteria criterion (5 of 19 samples - 57.1%) were recorded at DEQ's ambient water quality monitoring station (8-SAR096.83) at the Route 15 bridge to assess this stream segment as not supporting of the recreation use goal for the 2006 water quality assessment.

3. VAN-F02R_SAR02A00, which begins at the start of waterbody F02R, where Wheeler Creek intersects the South Anna River, and continues downstream until the confluence with Rock Creek. Sufficient excursions from the instantaneous *E. coli* bacteria criterion (5 of 15 samples - 33.3%) were recorded at DEQ's ambient water quality monitoring station (8-SAR089.35) at the Route 613 crossing to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment. The segment was previously listed for a fecal coliform bacteria impairment in 2006. The *E. coli* bacteria impairment was first listed in 2006.

4. VAN-F02R_SAR01A00, which begins at the confluence with Roundabout Creek and continues downstream until the confluence with Beaver Creek. Sufficient excursions from the instantaneous *E. coli* bacteria criterion (7 of 12 samples - 58.3%) were recorded at DEQ's ambient water quality monitoring station (8-SAR076.10) at the Route 604 crossing to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment. The segment was previously listed for a fecal coliform bacteria impairment, from 2004 through 2006. The *E. coli* bacteria impairment was first listed in 2006.

5. VAN-F03R_SAR03A06, which begins at the confluence with Northeast Creek and continues downstream until the confluence with an unnamed tributary to the South Anna River, approximately rivermile 66.97. Sufficient excursions from the instantaneous *E. coli* bacteria criterion (2 of 13 samples - 15.4%) were recorded at DEQ's ambient water quality monitoring station (8-SAR068.57) at the Route 605 crossing to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment.

A copy of the complete planning statement is located in the permit file.

b) Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream South Anna River, UT is located within Section 3c of the York River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 5 details other water quality criteria applicable to the receiving stream.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/l calcium carbonate). The average hardness of the receiving stream is 72.82 mg/l based on DEQ ambient monitoring of the South Anna River downstream from the discharge from 1995 to 2001. These data are considered representative even though they are several years old. The hardness-dependent metals criteria shown in **Attachment 5** are based on this value.

As the facility has the potential to exceed water quality criteria for copper and zinc, the facility is being issued this individual permit and will be given a compliance schedule to evaluate its metals concentrations. One option that is being evaluated is moving the discharge of Outfall 001 directly into the South Anna River which will allow for dilution. DEQ staff reviewed both ambient and effluent hardness data to derive the metals limits and have included metals effluent limitation requirements for both the existing outfall and the proposed outfall. Permit limits proposed for copper and zinc parameters for either the existing outfall or the proposed outfall will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream.

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, South Anna River, UT, is located within Section 3c of the Rappahannock River Basin. This section has no special standard designations.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect any threatened and endangered species found near the discharge.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The existing cooling water outfall discharges to a UT of the South Anna River. The receiving stream has a 1Q10 and 7Q10 flow of 0.00 MGD. It is staff's best professional judgment that for instances such as this, the stream should be designated a Tier 1 waterbody. The proposed outfall will discharge directly to the South Anna River. The South Anna River at the proposed outfall has a 1Q10 and 7Q10 flow of 0.03 MGD. Because exceedances of pH have been observed in the South Anna River downstream from the receiving segment, it is staff's opinion that the stream should be designated a Tier 1 waterbody at this location. Permit limits proposed will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:
Effluent data obtained from DMRs from the facility's cooling water general permit have been reviewed and determined to be suitable for evaluation. Data showed that dissolved Copper and Zinc concentrations in the discharge have the reasonable potential to exceed the state water quality criterion. A summary of effluent data can be found in the permit file.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

Should the facility decide to relocate Outfall 001 directly to the South Anna River, the following mixing zone information applies. A copy of the mixing zone predictions has been placed in the permit file as **Attachment 7**.

The Water Quality Standards contain two distinct mixing zone requirements. The first requirement is general in nature and requires the "use of mixing zone concepts in evaluating permit limits for acute and chronic standards in 9 VAC 25-260-140.B". The second requirement is specific and establishes special restrictions for regulatory mixing zones "established by the Board".

The Department of Environmental Quality uses a simplified mixing model to estimate the amount of mixing of a discharge with the receiving stream within specified acute and chronic exposure periods. The simplified model contains the following assumptions and approximations:

– The effluent enters the stream from the bank, either via a pipe, channel or ditch.
- The effluent velocity isn't significantly greater (no more than 1 - 2 ft/sec greater) than the stream velocity.
- The receiving stream is much wider than its depth (width at least ten times the depth).
- Diffusive mixing in the longitudinal direction (lengthwise) is insignificant compared with advective transport (flow).
- Complete vertical mixing occurs instantaneously at the discharge point. This is assumed since the stream depth is much smaller than the stream width.
- Lateral mixing (across the width) is a linear function of distance downstream.
- The effluent is neutrally buoyant (e.g. the effluent discharge temperature and salinity are not significantly different from the stream's ambient temperature and salinity).
- Complete mix is determined as the point downstream where the variation in concentration is 20% or less across the width and depth of the stream.
- The velocity of passing and drifting organisms is assumed equal to the stream velocity.

If it is suitably demonstrated that a reasonable potential for lethality or chronic impacts within the physical mixing area doesn't exist, then the basic complete mix equation, with 100% of the applicable stream flow, is appropriate. If the mixing analysis determines there is a potential for lethality or chronic impacts within the physical mixing area, then the proportion of stream flow that has mixed with the effluent over the allowed exposure time is used in the basic complete mix equation. As such, the wasteload allocation equation is modified to account for the decimal fraction of critical flow (f).

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent and where effluent data indicate the pollutant is present in the discharge above quantifiable levels.

c) Effluent Limitations and Monitoring, Outfall 001

The State Water Control Board has adopted a general VPDES permit for point source discharges of cooling water and cooling equipment blowdown to municipal separate storm sewer systems and surface waters (9 VAC 25-196-10 et seq.). An effluent limitation for flow and water quality based effluent limitations for pH and temperature have been established under the general VPDES permit for cooling water discharges. Concentrated minimum and concentrated maximum values for copper and zinc showed the reasonable potential to exceed state water quality criterion and therefore exclude the facility from coverage under the general permit. Based on the above, the following effluent limitations for Klockner are established.

1) The pH limitation is based upon the Water Quality Standards (9 VAC 25-260-5 et seq.) and is consistent with the general permit effluent limitation.

2) The temperature limitation is based upon the Water Quality Standards (9 VAC 25-260-50) and is consistent with the general permit effluent limitation.

3) A Total Residual Chlorine (TRC) limit is not proposed as the source of the cooling water is not chlorinated. This is consistent with the general permit language. It is staff's best professional judgment that Water Quality Standards (9 VAC 25-260-140) will be maintained.

4) An Ammonia limit is not proposed as the source of cooling water is not disinfected using chloramines.

5) Hardness will be monitored, but without specific limitations which is consistent with the general permit.

6) Total Phosphorus will be monitored, but without specific limitations which is consistent with the general permit.

7) Metals:

Limits are needed for the following parameters: Copper and Zinc. See **Attachment 5** for WLA and **Attachment 6** for the derivation of the limits.

d) Effluent Limitations and Monitoring Summary.

Sample Type and Frequency are in accordance with the recommendations in the VPDES General Permit.

18. Antibacksliding:

This is an issuance. Backsliding does not apply.

19.a Effluent Limitations/Monitoring Requirements: Outfall 001 to the South Anna River, UT

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date or the relocation of Outfall 001, whichever occurs first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NL	NA	NA	1/3M	Estimate
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M	Grab
Temperature (ºC)	3	NA	32	NA	NA	1/3M	IS
Hardness (mg/L as $CaCO_3$)	3	NL	NL	NA	NA	1/3M	Grab
Total Phosphorus (mg/L)	3	NL	NL	NA	NA	1/3M	Grab
Total Recoverable Copper (µg/L)	3	NA	10	NA	NA	1/3M	Grab
Total Recoverable Zinc (µg/L)	3	NA	90	NA	NA	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard Units.
IS = Immersion Stabilization
1/3M = Once every three months.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.
Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

19.b Effluent Limitations/Monitoring Requirements: Outfall 001 to South Anna River

Effective Dates: During the period beginning with the effective date of the newly relocated Outfall 001 and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NL	NA	NA	1/3M	Estimate
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M	Grab
Temperature (ºC)	3	NA	32	NA	NA	1/3M	IS
Hardness (mg/L as $CaCO_3$)	3	NL	NL	NA	NA	1/3M	Grab
Total Phosphorus (mg/L)	3	NL	NL	NA	NA	1/3M	Grab
Total Recoverable Copper (µg/L)	3	NA	14	NA	NA	1/3M	Grab
Total Recoverable Zinc (µg/L)	3	NA	130	NA	NA	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard Units.
IS = Immersion Stabilization
1/3M = Once every three months.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.
Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

20. Other Permit Requirements :

a) Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b) Part I.C. of the permit details the requirements for a Schedule of Compliance.

The VPDES Permit Regulation, 9 VAC 25-31-250 allows use of Compliance Schedules to allow facilities sufficient time for evaluations/upgrades to meet newly established effluent limits. The permit contains newly established limits for copper and zinc. Since the facility is now required to meet these limits; (1) a schedule of compliance is required to provide the permittee time to evaluate and determine if these limits can be met; (2) if an upgrade to this facility is needed to meet these new limits; or (3) if the facility has determined that it will no longer need the limits. Part of the evaluation may result in the relocation of the outfall directly to the South Anna River. The permittee shall achieve compliance with the final limits specified in Part I.A. of the VPDES permit for either the existing outfall 001 or the relocated outfall 001 in accordance with the following schedule as contained in Part I.C. of the permit:

Action	Time Frame
1. Submit a plan to achieve compliance with final copper and zinc limits.*	A plan shall be submitted 90 days from the effective date of the permit.
2. Report biannually of progress on attainment of final copper and zinc limits.	By August 1, 2010, February 1, 2011, August 1, 2011, February 1, 2012, August 1, 2012, February 1, 2013, August 1, 2013, and February 1, 2014.
3. Achieve compliance with final copper and zinc limits.	Within 60 days of the completion of compliance plan activities and implementation of the corrective measure(s) but no later than four (4) years from the effective date of the permit (January 29, 2014).

*Note: The facility submitted a compliance action plan for copper and zinc on December 12, 2008 as part of the general permit reissuance. The overall objective of this plan was to identify, test, implement, and confirm a strategy or a combination of strategies that would reduce effluent copper and zinc to levels that will comply with the VPDES general cooling water discharge permit target levels. As the facility has noted that other strategies may be considered as part of the schedule of compliance for this individual permit, a revised action plan is required.

21. Other Special Conditions :

a) Discharge Locations. The facility is evaluating relocating outfall 001 as part of the metals concentrations evaluation. Stream flow analysis for a direct discharge to the South Anna River at the proposed new outfall were calculated by DEQ staff. Additionally, wasteload allocations and effluent limitations were derived and Part I.A.2. provide for copper and zinc effluent limitations should the facility decide to relocate outfall 001. The stream flow analysis memorandum and effluent limitation derivations can be found in the permit file.

b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. By April 29, 2010, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9 VAC 25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

d) Notification Levels The permittee shall notify the Department as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter;

(2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;

(3) Five times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) Five hundred micrograms per liter;

(2) One milligram per liter for antimony;

(3) Ten times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

e) Materials Handling/Storage. 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorize the Board to regulate the discharge of industrial waste or other waste.

f) Cooling Water Systems. The permittee is required to properly operate and maintain all cooling water systems at all times. This is to ensure that the cooling tower blowdown will meet the effluent limitations of the permit. Inspections shall be conducted for each cooling water unit by the plant personnel at least once per year with reports maintained on site.

g) Cooling Tower Additives. This requirement prohibits the use of any chemical additives not identified in the registration statement without prior approval of the DEQ. Prior approval shall be obtained from the DEQ before any changes are made to the chemical and/or non-chemical treatment technology employed in the cooling water system. Requests for approval of the change shall be made in writing and include the following information:

a. Describe the chemical and/or non-chemical treatment to be employed and its purpose; if chemical additives are used, provide the information prescribed in subdivisions b, c, d and e;
b. Provide name and manufacturer of each additive used;
c. Provide list of active ingredients and percentage composition;
d. Give the proposed schedule and quantity of chemical usage, and estimate the concentration in the discharge.
e. Attach available aquatic toxicity information for each additive proposed for use; and
f. Attach any other information such as product or constituent degradation, fate, transport, synergies, bioavailability, etc. that will aid the board with the toxicity evaluation for the discharge.

h) Total Maximum Daily Load (TMDL) Reopener: This permit shall be modified or alternatively revoked and reissued if any approved wasteload allocation procedure, pursuant to Section 303(d) of the Clean Water Act, imposes wasteload allocations, limits or conditions on the facility that are not consistent with the permit requirements.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

22. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:
N/A – new permit.

b) Monitoring and Effluent Limitations:
N/A – new permit.

23. Variances/Alternate Limits or Conditions:

N/A

24. Public Notice Information:

First Public Notice Date: December 24, 2009 Second Public Notice Date: December 31, 2009

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3863, susan.oakes@deq.virginia.gov. See **Attachment 8** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):
The South Anna River, UT is not on the current 303(d) list; however, there are several segments on the South Anna River that are listed as impaired.

E. coli monitoring for the downstream segments finds a bacterial impairment, resulting in an impaired classification for the recreation use. A fecal coliform TMDL for the South Anna River watershed has been completed and approved. The aquatic life and wildlife uses are considered fully supporting. An observed effect for the aquatic life use is noted, based on biological monitoring. The fish consumption use was not assessed.

The unnamed tributary to the South Anna River was not specifically included in the Pamunkey River Basin bacteria TMDL.

The Bacteria TMDL for the Pamunkey River Basin considered all upstream facilities. However, because this facility is not expected to discharge the contaminant of concern, it did not receive a WLA. A copy of the planning statement with a detailed summary taken from the 2008 Integrated assessment can be found in the permit file for further review.

TMDL Reopener: This special condition is to allow the permit to be reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

26. Additional Comments:

Previous Board Action(s): None – new permit.

Staff Comments: The discharge addressed by this permit is not a new discharge. The discharge from this system was originally covered under a general VPDES permit for cooling water discharges (VAG250024). Due to a reasonable potential of the copper and zinc parameters to exceed state water quality criterion, the facility is no longer eligible for coverage under the general permit and an individual permit must be issued. Additionally, there are no changes related to the operation of the facility or in the constituents of the discharge necessitating this change in permit coverage.

Public Comment: DEQ received two email inquiries during the public notice comment period.
1. The first inquiry asked whether this permit was a renewal of an existing permit or a new permit and what were the circumstances that required issuing an individual permit (IP) vs. a general permit (GP). DEQ explained the reasonable potential to exceed state water quality criterion for copper and zinc therefore the need for permit limits. DEQ explained that it was not a new discharge but that permit regulations differ necessitating an IP vs. a GP. No additional comments were received for this inquiry.
2. The second inquiry asked whether this type of permit is normal for this type of facility, if it had been applied for before, what is the timeframe for approval, any impact on the South Anna River, duration of the permit, and monitoring protocol. DEQ again explained the reasonable potential to exceed state water quality criterion which requires a facility apply for the IP and that the facility was originally covered under the GP. DEQ explained the public comment period and the five-year permit cycle and that the permit is drafted under a worse-case scenario which will limit pollutants to amounts that protect water quality. Additionally DEQ stated that the permittee is required to submit discharge monitoring reports and must comply with all permit limits and requirements. DEQ received no further comments.

Emails and responses were placed in the permit file.

EPA Checklist: The checklist can be found in **Attachment 9**.

Klockner Pentaplast of America
Fact Sheet Attachments – Table of Contents
VA0092533

Attachment 1	NPDES Permit Rating Worksheet
Attachment 2	Facility schematic/flow diagram
Attachment 3	Boswells Tavern, DEQ #172C Topographic Map
Attachment 4	Site Inspection
Attachment 5	Wasteload Allocations/Water Quality Criteria – Existing & Proposed Outfalls
Attachment 6	Statistical analysis for Copper and Zinc – Existing & Proposed Outfalls
Attachment 7	Mixing Zone Analysis
Attachment 8	Public Notice
Attachment 9	EPA Checklist
Attachment 10	South Anna River Flow Memo

NPDES PERMIT RATING WORK SHEET

[X] Regular Addition
[ ] Discretionary Addition
[ ] Score change, but no status Change
[ ] Deletion

VPDES NO. : VA0092533

Facility Name: Klockner Pentaplast of America
City / County: Gordonsville/Louisa
Receiving Water: South Anna River, UT
Waterbody ID: VANF01R

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

[ ] Yes; score is 600 (stop here) [X] NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: 3081 Other Sic Codes: _____ _____ _____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[X] No process waste streams	0	0	[ ] 3.	3	15	[ ] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: 0

Total Points Factor 1: 0

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	[X]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow > 10 to 50 MGD	[ ]	13	20
	Flow > 50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[ ]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow > 5 to 10 MGD	[ ]	23	30
	Flow > 10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow > 5 to 10 MGD	[ ]	33	20
	Flow > 10 MGD	[ ]	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	10 % to < 50 %	[ ]	42	10
	> 50%	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	10 % to < 50 %	[ ]	52	20
	> 50 %	[ ]	53	30

Code Checked from Section A or B: 11

Total Points Factor 2: 0

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)

	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: N/A

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)

	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: N/A

Points Scored: 0

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one)

Nitrogen Equivalent	Code	Points
☐ < 300 lbs/day	1	0
☐ 300 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: N/A

Points Scored: 0

Total Points Factor 3: 0

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☒ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: N/A

Total Points Factor 4: 0

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge*

		Code	Points
[X]	YES	1	10
[ ]	NO	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

		Code	Points
[X]	YES	1	0
[ ]	NO	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

Code Number Checked: A 1 B 1 C 2

Points Factor 5: A 10 + B 0 + C 0 = **10**

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) 11

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
[ ]	1	1	20
[ ]	2	2	0
[ ]	3	3	30
[X]	4	4	0
[ ]	5	5	20

Enter the multiplication factor that corresponds to the flow code: 0.00

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked : 4

Base Score (HPRI Score): 0 X (Multiplication Factor) 0.00 = 0

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
[ ]	1	10
[X]	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
[ ]	1	10
[X]	2	0

Code Number Checked: A 4 B 2 C 2

Points Factor 6: A 0 + B 0 + C 0 = **0**

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	0
2	Flows / Streamflow Volume	0
3	Conventional Pollutants	0
4	Public Health Impacts	0
5	Water Quality Factors	10
6	Proximity to Near Coastal Waters	0
	TOTAL (Factors 1 through 6)	10

S1. Is the total score equal to or grater than 80 ☐ YES; (Facility is a Major) ☒ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☒ NO

☐ YES; (Add 500 points to the above score and provide reason below:

Reason: _____

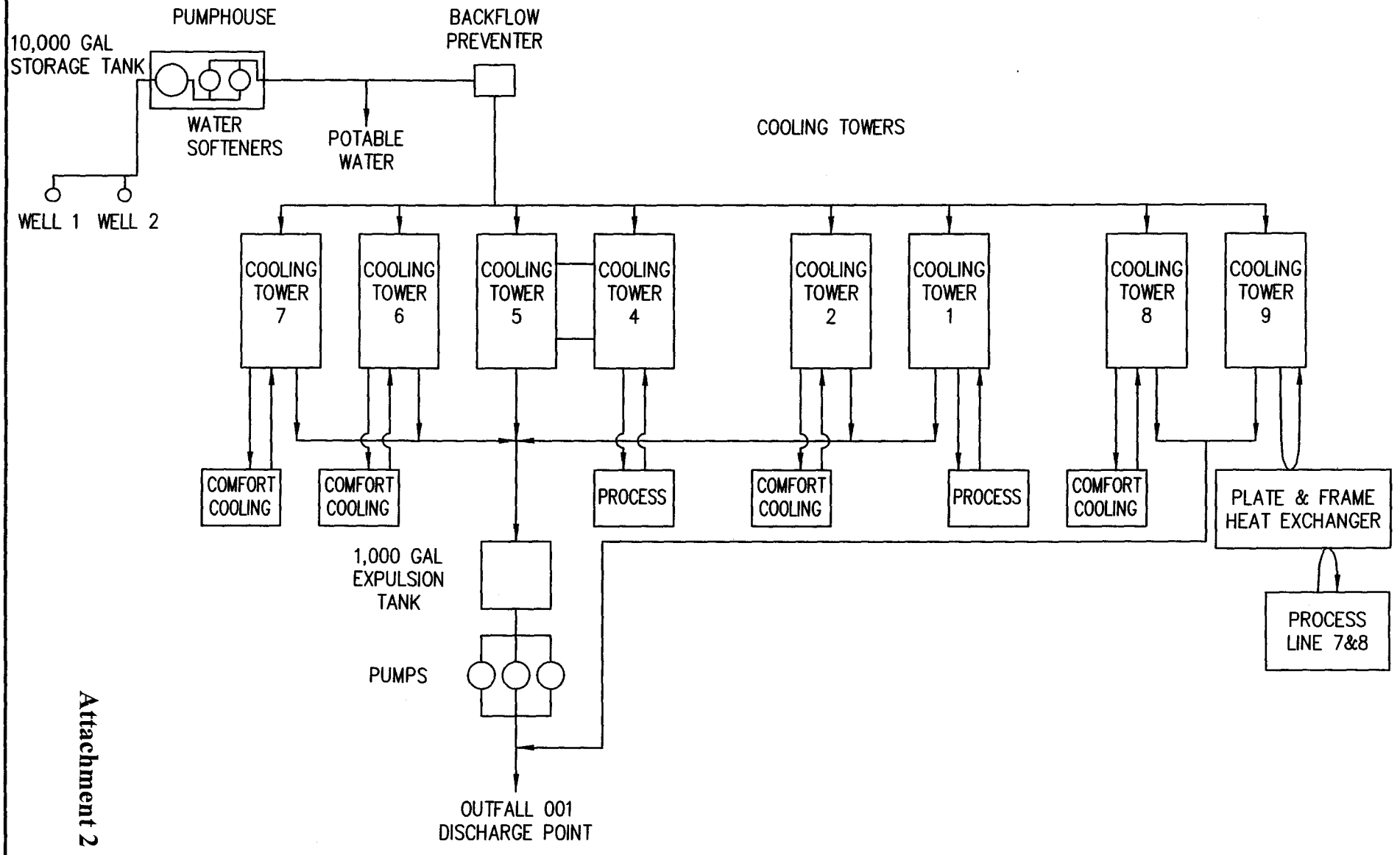
NEW SCORE : 10

OLD SCORE : N/A

Permit Reviewer's Name : Susan Oakes

Phone Number: (703)583-3863

Date: 09/21/09



Attachment 2

KLOCKNER PENTAPLAST OF AMERICA, INC.
GORDONSVILLE, VIRGINIA FACILITY
COOLING WATER SCHEMATIC

FIGURE 1

SCALE: NO SCALE
JOB NO.: 11834.12

DEC 3, 2008

OLVER INCORPORATED

I:\Dwg\Klockner\11834.12\FIG 1.dwg, Layout1, 2008-12-11 9:23:43 AM, chodge

) STATES
)F THE INTERIOR
:AL SURVEY

COMMONWEALTH OF
DIVISION OF MINERAL RE

Attachment 3

September 2, 2009
MEMORANDUM

To: Permit Issuance Site Inspection Attachment

From: Susan Oakes, Permit Writer

Subject: August 27, 2009 Site Visit Klockner Pentaplast of America

---

On August 27, 2009, DEQ conducted a site inspection of the Klockner Pentaplast of America manufacturing plant (Klockner), for an issuance of an individual industrial permit. Persons present during the inspection were Keith Roberts and Jim Gibson of Klockner and Susan Oakes, Permit Writer for DEQ.

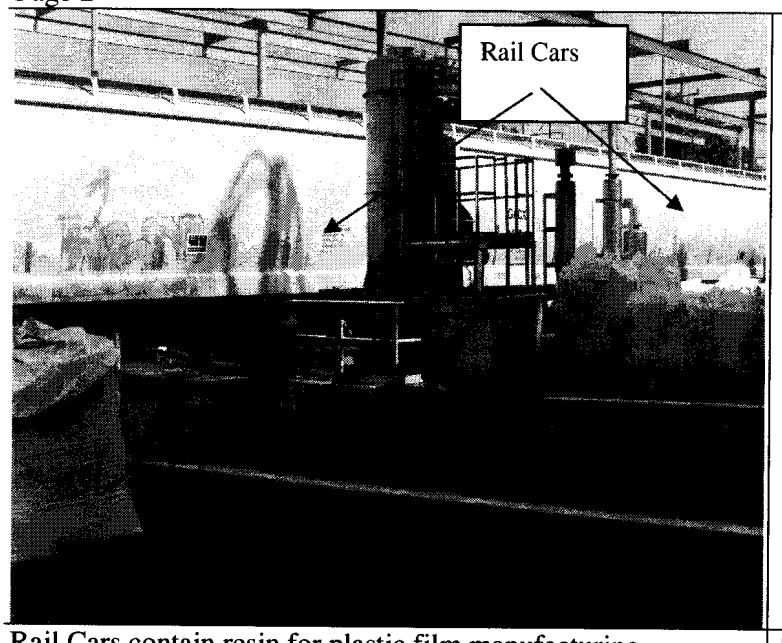
Klockner was originally covered under the Cooling Water General Permit; however, DMR data reviewed for the 2008 reissuance showed that copper and zinc concentrations in the discharge have the reasonable potential to exceed the state water quality criterion. Klockner evaluated options to reduce copper and zinc concentrations in order to continue coverage under the general cooling water permit; however, will require an individual permit with a schedule of compliance to address the copper and zinc concentrations.

Klockner manufactures plastic film for various packing applications. Polyester resins and resins are brought onto the site via rail cars. The resins are offloaded from the rail cars into silos and subsequently transferred to the third floor where they are mixed and formulated for processing into various films.

Klockner has eight cooling towers located on site. Six of the cooling towers serve six of the production areas and the front office area. Three of these six towers are comfort cooling chillers for plant air conditioning. The other three towers are used for non-contact cooling to support the manufacturing operations and equipment. The remaining two towers serve the polyester process lines seven and eight. One cooling tower is for process cooling and the other is for comfort cooling. The four comfort-cooling chillers operate seasonally generally from March to October. The facility cleans out the cooling towers with potable water twice a year usually in the spring and fall. Washwater is discharged to the stormwater sediment pond. Non-contact cooling water is discharged from the towers on an intermittent basis and is based on conductivity readings. Once conductivity reaches a certain level, non-contact cooling water blowdown is discharged to a 1,000-gallon storage tank in the basement. When the tank level reaches a certain point, the non-contact cooling wastewater is discharged to Outfall 001. The discharge for cooling towers eight and nine discharge directly to Outfall 001. Sampling was taken at the 1,000-gallon storage tank; however, will now be taken at Outfall 001 to account for the direct discharge from cooling towers eight and nine. Bond 5008 is used as a dispersant and corrosion inhibitor and one 55-gallon drum is stored in the boiler room and one in the cooling tower 8&9 building.

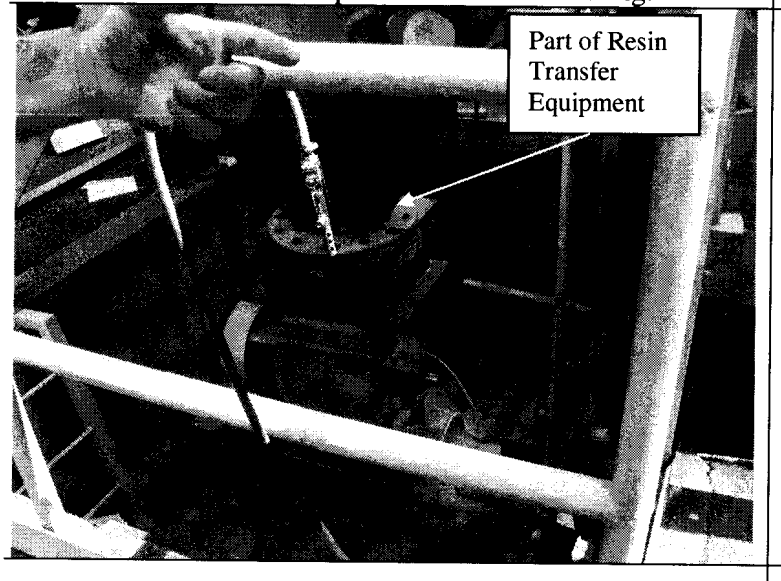
The facility also has a shipping and warehouse area and its own trucking company for shipping the plastic film product.

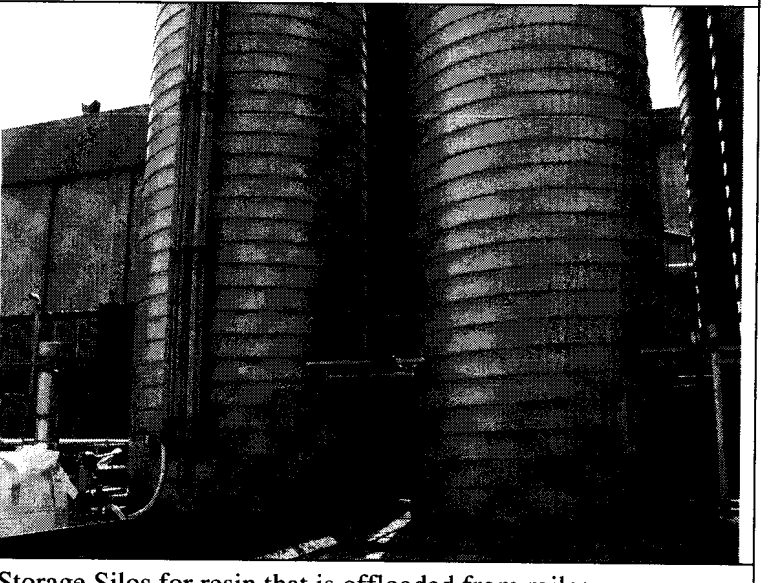
Outfall 001 discharges along with stormwater runoff from the stormwater pond through a culvert pipe, under a gravel road to a UT of the South Anna River. The cooling towers were discharging (see photo below) and minnows were noted in the water. Staff walked across the road to an open field where the UT was located behind a tree line. The UT appeared to lack movement and the bottom had decaying leaves and silt. The UT travels for approximately 1,200 feet before reaching the South Anna River. The area was not accessible.



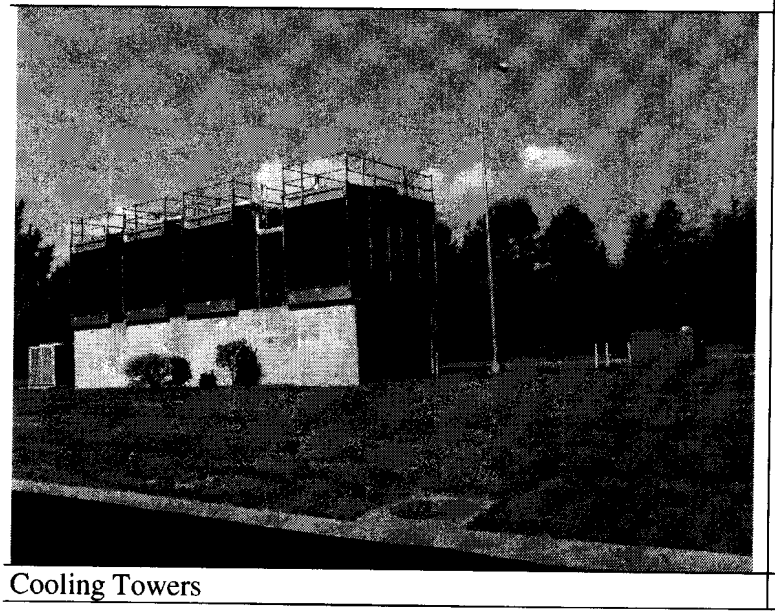
Rail Cars contain resin for plastic film manufacturing.

Transfer line for resin from rail car to silos.

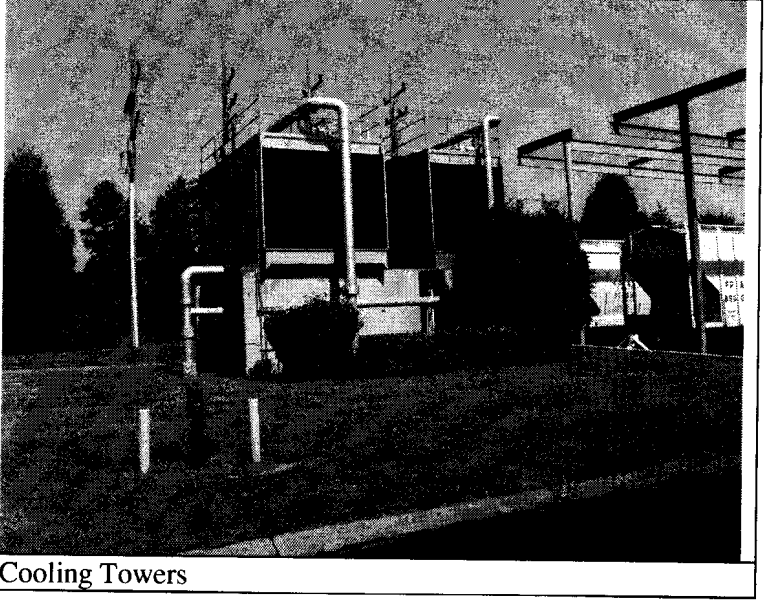




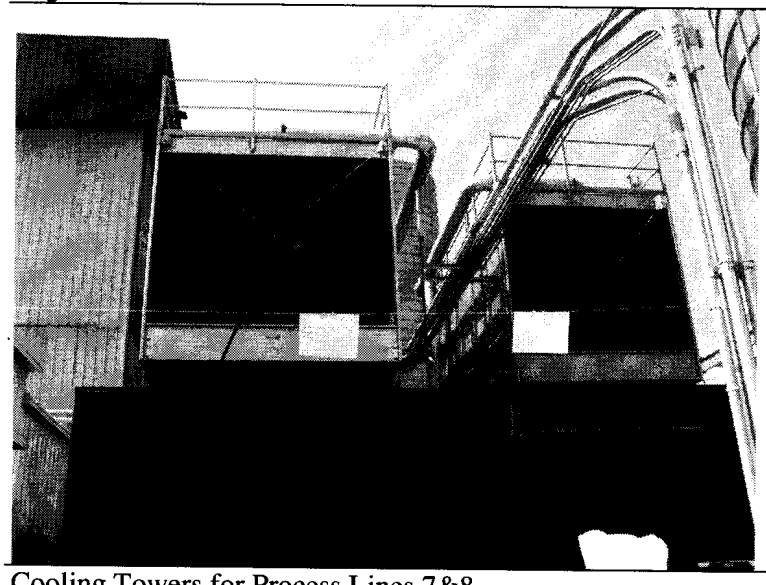
Storage Silos for resin that is offloaded from railcars.



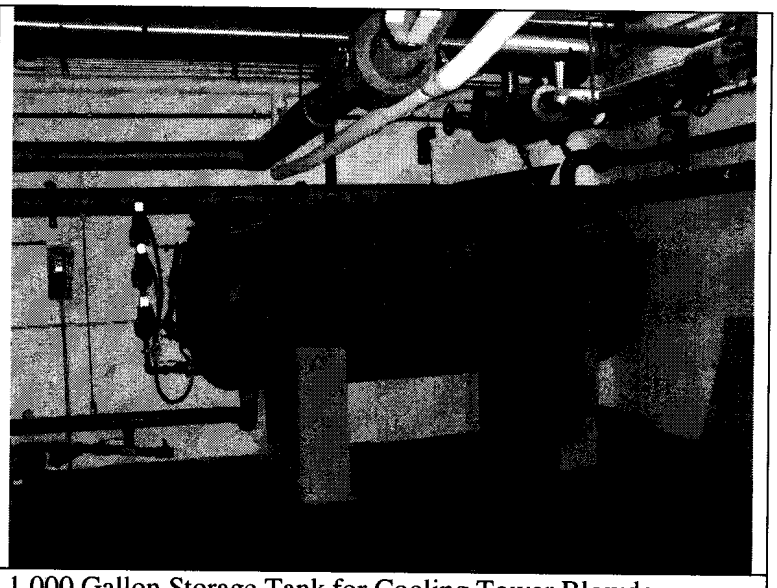
Cooling Towers



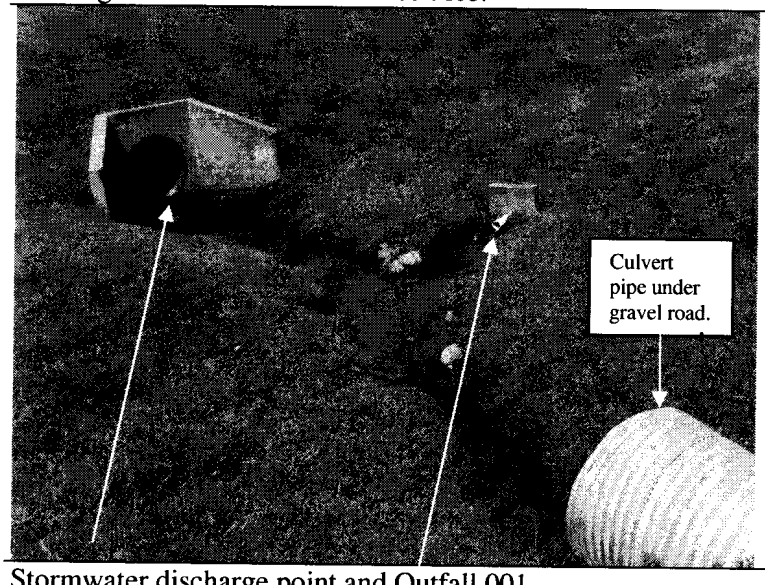
Cooling Towers



Cooling Towers for Process Lines 7&8.

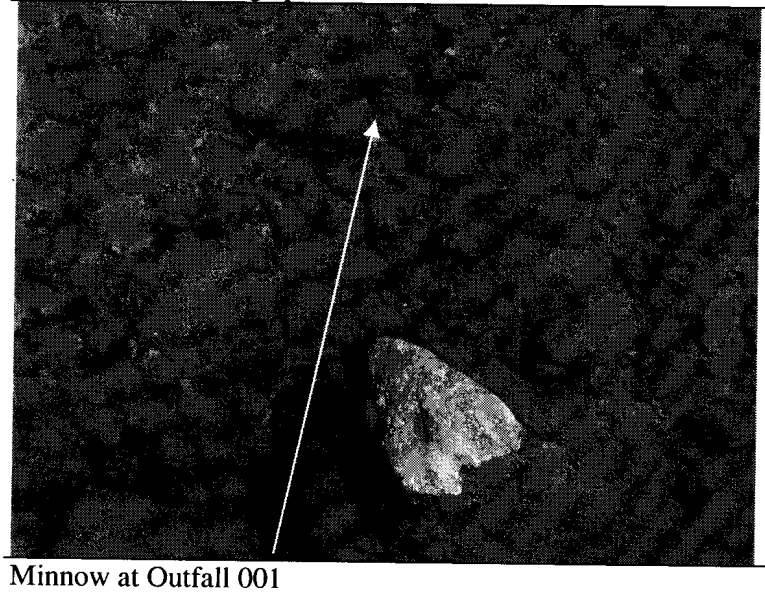


1,000 Gallon Storage Tank for Cooling Tower Blowdown.

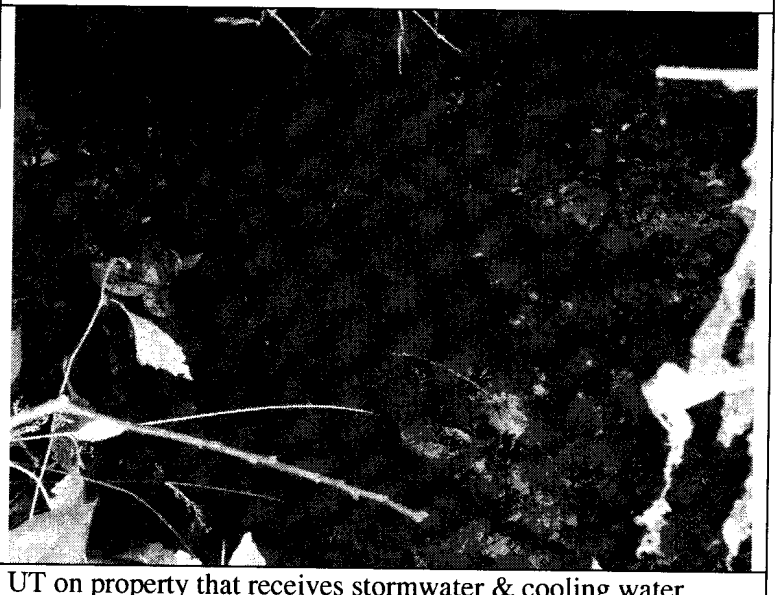


Stormwater discharge point and Outfall 001

Outfall 001



Minnow at Outfall 001



UT on property that receives stormwater & cooling water blowdown prior to discharging to South Anna River.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Klockner Pentaplast of America Permit No.: VA0092533

Receiving Stream: South Anna River, UT (existing) Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	0 %	Mean Hardness (as CaCO3) =	72.82 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	0 %	90% Temp (Annual) =	22.71 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	0 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	0 %	90% Maximum pH =	8.37 SU
10% Maximum pH =	SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	0 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.0058 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	5	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	4.12E+00	8.00E-01	na	--	4.1E+00	8.0E-01	na	--	--	--	--	--	--	--	--	--	4.1E+00	8.0E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	4.12E+00	1.36E+00	na	--	4.1E+00	1.4E+00	na	--	--	--	--	--	--	--	--	--	4.1E+00	1.4E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	2.7E+00	8.8E-01	na	--	2.7E+00	8.8E-01	na	--	--	--	--	--	--	--	--	--	2.7E+00	8.8E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	**na**	**1.3E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	**na**	**1.1E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	**na**	**1.6E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	**na**	**1.5E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	**na**	**--**
Chromium III	0	4.4E+02	5.7E+01	na	--	4.4E+02	5.7E+01	na	--	--	--	--	--	--	--	--	--	**4.4E+02**	**5.7E+01**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	**na**	**--**
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	**na**	**1.8E-02**
Copper	0	1.0E+01	6.8E+00	na	--	1.0E+01	6.8E+00	na	--	--	--	--	--	--	--	--	--	**1.0E+01**	**6.8E+00**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	**na**	**1.6E+04**
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	**na**	**3.1E-03**
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	**na**	**2.2E-03**
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**na**	**2.2E-03**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	**1.0E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**1.7E-01**	**na**	**--**
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	**na**	**1.8E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	**na**	**1.3E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	**na**	**9.6E+02**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	**na**	**1.9E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	**na**	**2.8E-01**
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	**na**	**1.7E+02**
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	**na**	**3.7E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	**na**	**7.1E+03**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	**na**	**1.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	**na**	**2.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	**na**	**1.5E+02**
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	**na**	**2.1E+02**
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	**na**	**5.4E-04**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	**na**	**4.4E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	**na**	**8.5E+02**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	**na**	**1.1E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	**na**	**4.5E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	**na**	**5.3E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	**na**	**2.8E+02**
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	**na**	**3.4E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	**na**	**5.1E-08**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	**na**	**2.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	**na**	**8.9E+01**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	**na**	**6.0E-02**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	**na**	**3.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**na**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**7.9E-04**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**3.9E-04**
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E-03**
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+02**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-02**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E-01**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	**9.5E-01**	**--**	**na**	**1.8E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+03**
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**2.0E+00**	**na**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+03**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Lead	0	7.9E+01	9.0E+00	na	--	7.9E+01	9.0E+00	na	--	--	--	--	--	--	--	--	--	**7.9E+01**	**9.0E+00**	**na**	**--**
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	**1.4E+00**	**7.7E-01**	**--**	**--**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+03**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.9E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**3.0E-02**	**na**	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Nickel	0	1.4E+02	1.5E+01	na	4.6E+03	1.4E+02	1.5E+01	na	4.6E+03	--	--	--	--	--	--	--	--	**1.4E+02**	**1.5E+01**	**na**	**4.6E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.9E+02**
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+01**
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+01**
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+00**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	**2.8E+01**	**6.6E+00**	**na**	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	**na**	**--**
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**6.4E-04**
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	**7.7E-03**	**5.9E-03**	**na**	**3.0E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.6E+05**
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+00**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	2.0E+00	--	na	--	2.0E+00	--	na	--	--	--	--	--	--	--	--	--	**2.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene[C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene[C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	9.0E+01	9.0E+01	na	2.6E+04	9.0E+01	9.0E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**9.0E+01**	**9.0E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	5.3E-01
Chromium III	3.4E+01
Chromium VI	6.4E+00
Copper	4.0E+00
Iron	na
Lead	5.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	9.3E+00
Selenium	3.0E+00
Silver	8.0E-01
Zinc	3.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Klockner Pentaplast of America Permit No.: VA0092533

Receiving Stream: South Anna River (proposed outfall) Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	72.82	mg/L	1Q10 (Annual) =	0.03	MGD	Annual - 1Q10 Mix =	19.26	%	Mean Hardness (as CaCO3) =	25	mg/L
90% Temperature (Annual) =	22.71	deg C	7Q10 (Annual) =	0.03	MGD	- 7Q10 Mix =	100	%	90% Temp (Annual) =	28	deg C
90% Temperature (Wet season) =		deg C	30Q10 (Annual) =	0.04	MGD	- 30Q10 Mix =	100	%	90% Temp (Wet season) =		deg C
90% Maximum pH =	8.37	SU	1Q10 (Wet season) =	225.35	MGD	Wet Season - 1Q10 Mix =		%	90% Maximum pH =	9	SU
10% Maximum pH =		SU	30Q10 (Wet season)	25.01	MGD	- 30Q10 Mix =		%	10% Maximum pH =		SU
Tier Designation (1 or 2) =	1		30Q5 =	0.04	MGD				Discharge Flow =	0.0058	MGD
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	0.62	MGD						
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	5	--	--	na	9.9E+02	--	--	na	7.8E+03	--	--	--	--	--	--	--	--	--	--	na	7.8E+03
Acrolein	0	--	--	na	9.3E+00	--	--	na	7.3E+01	--	--	--	--	--	--	--	--	--	--	na	7.3E+01
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.7E+02	--	--	--	--	--	--	--	--	--	--	na	2.7E+02
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	6.0E+00	--	na	5.4E-02	--	--	--	--	--	--	--	--	6.0E+00	--	na	5.4E-02
Ammonia-N (mg/l) (Yearly)	0	2.75E+00	7.11E-01	na	--	5.5E+00	5.6E+00	na	--	--	--	--	--	--	--	--	--	5.5E+00	5.6E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.32E+00	4.86E-01	na	--	1.3E+00	4.9E-01	na	--	--	--	--	--	--	--	--	--	1.3E+00	4.9E-01	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	3.2E+05	--	--	--	--	--	--	--	--	--	--	na	3.2E+05
Antimony	0	--	--	na	6.4E+02	--	--	na	5.1E+03	--	--	--	--	--	--	--	--	--	--	na	5.1E+03
Arsenic	o	3.4E+02	1.5E+02	na	--	6.8E+02	9.3E+02	na	--	--	--	--	--	--	--	--	--	6.8E+02	9.3E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.5E+04	--	--	--	--	--	--	--	--	--	--	na	5.5E+04
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.2E-01	--	--	--	--	--	--	--	--	--	--	na	2.2E-01
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.7E+02	--	--	--	--	--	--	--	--	--	--	na	5.7E+02
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	5.1E+05	--	--	--	--	--	--	--	--	--	--	na	5.1E+05
Bis 2-Ethylhexyl Phthalate[C]	0	--	--	na	2.2E+01	--	--	na	2.4E+03	--	--	--	--	--	--	--	--	--	--	na	2.4E+03
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.5E+05	--	--	--	--	--	--	--	--	--	--	na	1.5E+05
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.5E+04	--	--	--	--	--	--	--	--	--	--	na	1.5E+04
Cadmium	0	1.7E+00	8.1E-01	na	--	3.5E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	3.5E+00	5.0E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	4.8E+00	2.7E-02	na	8.7E-01	--	--	--	--	--	--	--	--	4.8E+00	2.7E-02	na	8.7E-01
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	1.4E+06	na	--	--	--	--	--	--	--	--	--	1.7E+06	1.4E+06	na	--
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	6.8E+01	na	--	--	--	--	--	--	--	--	--	3.8E+01	6.8E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.3E+04	--	--	--	--	--	--	--	--	--	--	na	1.3E+04

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+04**
Chloroform	0	--	--	na	1.1E+04	--	--	na	8.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.7E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.3E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+04**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+03**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	2.5E-01	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**2.5E-01**	**na**	**--**
Chromium III	0	3.2E+02	5.2E+01	na	--	6.3E+02	3.2E+02	na	--	--	--	--	--	--	--	--	--	**6.3E+02**	**3.2E+02**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	6.8E+01	na	--	--	--	--	--	--	--	--	--	**3.2E+01**	**6.8E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.9E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+00**
Copper	0	6.8E+00	6.2E+00	na	--	1.4E+01	3.8E+01	na	--	--	--	--	--	--	--	--	--	**1.4E+01**	**3.8E+01**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.4E+01	3.2E+01	na	1.3E+05	--	--	--	--	--	--	--	--	**4.4E+01**	**3.2E+01**	**na**	**1.3E+05**
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E-01**
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.4E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E-01**
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	2.2E+00	6.2E-03	na	2.4E-01	--	--	--	--	--	--	--	--	**2.2E+00**	**6.2E-03**	**na**	**2.4E-01**
Demeton	0	--	1.0E-01	na	--	--	6.2E-01	na	--	--	--	--	--	--	--	--	--	**--**	**6.2E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	3.4E-01	1.0E+00	na	--	--	--	--	--	--	--	--	--	**3.4E-01**	**1.0E+00**	**na**	**--**
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.0E+04**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	7.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.6E+03**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+03**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+01**
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.8E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+04**
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+04**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	5.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.6E+04**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	7.9E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.9E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.3E+03**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+04**
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.3E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.3E+04**
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	4.8E-01	3.5E-01	na	5.8E-02	--	--	--	--	--	--	--	--	**4.8E-01**	**3.5E-01**	**na**	**5.8E-02**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	3.5E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.5E+05**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	6.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.7E+03**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	8.7E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.7E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	3.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.6E+04**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	4.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+03**
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+03**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	4.0E-07	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E-07**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+02**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	3.5E-01	na	7.0E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**3.5E-01**	**na**	**7.0E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	3.5E-01	na	7.0E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**3.5E-01**	**na**	**7.0E+02**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.4E-01	3.5E-01	--	--	--	--	--	--	--	--	--	--	**4.4E-01**	**3.5E-01**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	7.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+02**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.7E-01	2.2E-01	na	4.7E-01	--	--	--	--	--	--	--	--	**1.7E-01**	**2.2E-01**	**na**	**4.7E-01**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	2.4E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+00**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Fluorene	0	--	--	na	5.3E+03	--	--	na	4.2E+04	--	--	--	--	--	--	--	--	--	--	na	4.2E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	6.2E-02	na	--	--	--	--	--	--	--	--	--	--	6.2E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	1.0E+00	2.3E-02	na	8.5E-02	--	--	--	--	--	--	--	--	1.0E+00	2.3E-02	na	8.5E-02
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	1.0E+00	2.3E-02	na	4.2E-02	--	--	--	--	--	--	--	--	1.0E+00	2.3E-02	na	4.2E-02
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	3.1E-01	--	--	--	--	--	--	--	--	--	--	na	3.1E-01
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	1.9E+04
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.8E+01	--	--	--	--	--	--	--	--	--	--	na	1.8E+01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	1.9E+00	--	na	1.9E+02	--	--	--	--	--	--	--	--	1.9E+00	--	na	1.9E+02
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	8.7E+03	--	--	--	--	--	--	--	--	--	--	na	8.7E+03
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.2E+01	na	--	--	--	--	--	--	--	--	--	--	1.2E+01	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	1.0E+06	--	--	--	--	--	--	--	--	--	--	na	1.0E+06
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.8E+01	7.8E+00	na	--	9.5E+01	4.8E+01	na	--	--	--	--	--	--	--	--	--	9.5E+01	4.8E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	6.2E-01	na	--	--	--	--	--	--	--	--	--	--	6.2E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	2.8E+00	4.8E+00	--	--	--	--	--	--	--	--	--	--	2.8E+00	4.8E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	6.4E+05	--	--	--	--	--	--	--	--	--	--	na	6.4E+05
Methoxychlor	0	--	3.0E-02	na	--	--	1.9E-01	na	--	--	--	--	--	--	--	--	--	--	1.9E-01	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	9.9E+01	1.4E+01	na	4.6E+03	2.0E+02	8.7E+01	na	3.6E+04	--	--	--	--	--	--	--	--	2.0E+02	8.7E+01	na	3.6E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	5.4E+03	--	--	--	--	--	--	--	--	--	--	na	5.4E+03
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	3.2E+03
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.5E+03	--	--	--	--	--	--	--	--	--	--	na	6.5E+03
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.5E+02	--	--	--	--	--	--	--	--	--	--	na	5.5E+02
Nonylphenol	0	2.8E+01	6.6E+00	--	--	5.6E+01	4.1E+01	na	--	--	--	--	--	--	--	--	--	5.6E+01	4.1E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	8.0E-02	na	--	--	--	--	--	--	--	--	--	1.3E-01	8.0E-02	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	8.6E-02	na	6.9E-02	--	--	--	--	--	--	--	--	--	8.6E-02	na	6.9E-02
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	1.5E-02	3.6E-02	na	3.2E+03	--	--	--	--	--	--	--	--	1.5E-02	3.6E-02	na	3.2E+03
Phenol	0	--	--	na	8.6E+05	--	--	na	6.8E+06	--	--	--	--	--	--	--	--	--	--	na	6.8E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	3.2E+04	--	--	--	--	--	--	--	--	--	--	na	3.2E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	3.2E+01	--	--	--	--	--	--	--	--	--	--	na	3.2E+01
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.0E+01	3.1E+01	na	3.3E+04	--	--	--	--	--	--	--	--	**4.0E+01**	**3.1E+01**	**na**	**3.3E+04**
Silver	0	1.0E+00	--	na	--	2.0E+00	--	na	--	--	--	--	--	--	--	--	--	**2.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.3E+03**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.6E+03**
Thallium	0	--	--	na	4.7E-01	--	--	na	3.7E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+00**
Toluene	0	--	--	na	6.0E+03	--	--	na	4.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene[C]	0	7.3E-01	2.0E-04	na	2.8E-03	1.5E+00	1.2E-03	na	3.0E-01	--	--	--	--	--	--	--	--	**1.5E+00**	**1.2E-03**	**na**	**3.0E-01**
Tributyltin	0	4.6E-01	7.2E-02	na	--	9.2E-01	4.4E-01	na	--	--	--	--	--	--	--	--	--	**9.2E-01**	**4.4E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	5.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.5E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+04**
Trichloroethylene[C]	0	--	--	na	3.0E+02	--	--	na	3.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.2E+04**
2,4,6-Trichlorophenol[C]	0	--	--	na	2.4E+01	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.6E+03**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.6E+03**
Zinc	0	6.4E+01	8.2E+01	na	2.6E+04	1.3E+02	5.1E+02	na	2.1E+05	--	--	--	--	--	--	--	--	**1.3E+02**	**5.1E+02**	**na**	**2.1E+05**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	5.1E+03
Arsenic	2.7E+02
Barium	na
Cadmium	1.4E+00
Chromium III	1.9E+02
Chromium VI	1.3E+01
Copper	5.5E+00
Iron	na
Lead	2.9E+01
Manganese	na
Mercury	1.1E+00
Nickel	5.2E+01
Selenium	1.6E+01
Silver	8.0E-01
Zinc	5.1E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Copper South Anna, UT ambient data

9/24/2009 1:22:37 PM

Facility = Klockner
Chemical = Copper (existing outfall)
Chronic averaging period = 4
WLAa = 10
WLAc = 6.8
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 24
Expected Value = 258.049
Variance = 20225.8
C.V. = 0.551124
97th percentile daily values = 595.421
97th percentile 4 day average = 413.821
97th percentile 30 day average= 306.890
< Q.L. = 0
Model used = lognormal

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 9.78407645650579
Average Weekly limit = 9.78407645650579
Average Monthly LImit = 9.78407645650579

The data are:

120
140
300
84
200
130
320
210
130
280
160
310
290
300
380
320
470
490
520
240
230
250
90
150

Attachment 6

Zinc South Anna, UT ambient data

9/24/2009 1:25:20 PM

Facility = Klockner
Chemical = Zinc (existing outfall)
Chronic averaging period = 4
WLAa = 90
WLAc = 90
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 23
Expected Value = 184.025
Variance = 99368.8
C.V. = 1.712958
97th percentile daily values = 838.523
97th percentile 4 day average = 564.080
97th percentile 30 day average= 292.281
< Q.L. = 0
Model used = lognormal

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 90
Average Weekly limit = 90
Average Monthly LImit = 90

The data are:

20
27
48
12
26
33
28
23
19
90
190
150
230
220
190
400
380
460
220
250
240
100
240

Copper Proposed Outfall

12/2/2009 3:59:31 PM

Facility = Klockner Pentaplast of America
Chemical = Copper (proposed outfall)
Chronic averaging period = 4
WLAa = 14
WLAc = 38
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 24
Expected Value = 258.049
Variance = 20225.8
C.V. = 0.551124
97th percentile daily values = 595.421
97th percentile 4 day average = 413.821
97th percentile 30 day average= 306.890
< Q.L. = 0
Model used = lognormal

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 14
Average Weekly limit = 14
Average Monthly LImit = 14

The data are:

120
140
300
84
200
130
320
210
130
280
160
310
290
300
380
320
470
490
520
240
230
250
90
150

Attachment 6

Zinc Proposed Outfall

12/2/2009 4:02:30 PM

Facility = Klockner Pentaplast of America
Chemical = Zinc (proposed outfall)
Chronic averaging period = 4
WLAa = 130
WLAc = 510
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 23
Expected Value = 184.025
Variance = 99368.8
C.V. = 1.712958
97th percentile daily values = 838.523
97th percentile 4 day average = 564.080
97th percentile 30 day average= 292.281
< Q.L. = 0
Model used = lognormal

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 130
Average Weekly limit = 130
Average Monthly LImit = 130

The data are:

20
27
48
12
26
33
28
23
19
90
190
150
230
220
190
400
380
460
220
250
240
100
240

Mixing Zone Predictions for Klockner Pentaplast of America

Effluent Flow = 0.0058 MGD
Stream 7Q10 = 0.03 MGD
Stream 30Q10 = 0.04 MGD
Stream 1Q10 = 0.03 MGD
Stream slope = 0.001136364 ft/ft
Stream width = 12 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .0638 ft
Length = 1352.85 ft
Velocity = .0724 ft/sec
Residence Time = .2163 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .074 ft
Length = 1194.95 ft
Velocity = .0798 ft/sec
Residence Time = .1732 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .0638 ft
Length = 1352.85 ft
Velocity = .0724 ft/sec
Residence Time = 5.1913 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 19.26% of the 1Q10 is used.

Virginia DEQ Mixing Zone Analysis Version 2.1

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of non contact cooling water into a water body in Gordonsville/Louisa County, Virginia.

PUBLIC COMMENT PERIOD: December 21, 2009 to 5:00 p.m. on January 20, 2010

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Klockner Pentaplast of America, Inc.
3585 Klockner Road
Gordonsville, VA 22942
VA0092533

NAME AND ADDRESS OF FACILITY: Klockner Pentaplast of America
3585 Klockner Road, Gordonsville, VA 22942

PROJECT DESCRIPTION: Klockner Pentaplast of America, Inc. has applied for an issuance of a permit for the public Klockner Pentaplast of America. The applicant proposes to release cooling water from non-contact cooling of process heating equipment and comfort-cooling chillers at an estimated maximum rate of 0.0058 million gallons per day into a water body. The facility proposes to release the cooling water into the South Anna River, UT in Gordonsville/Louisa County in the York River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, Temperature, Hardness, Total Phosphorus, Total Recoverable Copper and Total Recoverable Zinc.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment or may request electronic copies of the draft permit and fact sheet.
Name: Susan Oakes
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3863 E-mail: susan.oakes@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Klockner Pentaplast of America
NPDES Permit Number:	VA0092533
Permit Writer Name:	Susan Oakes
Date:	September 21, 2009

Major [ ] **Minor** [X] **Industrial** [X] **Municipal** [ ]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?			X
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?	X		

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?	X		
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?			X
5. Has there been any change in streamflow characteristics since the last permit was developed?			X
6. Does the permit allow the discharge of new or increased loadings of any pollutants?			X
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?		X	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?			X
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?	X		
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?			X

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?		X	
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			X
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			X
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?	X		
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	X		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?			X
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?		X	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			X
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?			X
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?			X
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			X

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?		X	
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?		X	
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?			X
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?	X		
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			X

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
Duty to mitigate	Monitoring and records	Transfers
Proper O & M	Signatory requirement	Monitoring reports
Permit actions	Bypass	Compliance schedules
	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Susan A. Oakes
Title	Environmental Specialist II
Signature	
Date	September 22, 2009

Date: 10/23/2009

To: Susan Oakes

Cc: Bryant Thomas

From: Phillip Hurst

Subject: Streamflow Analysis for South Anna River at Proposed Outfall Location for Klockner Pentaplast of America

---

Calculation of the requested flow statistics for the South Anna River at the proposed outfall location required the following:

1. The drainage area of the receiving stream (South Anna River) at the proposed outfall's estimated location.

2. Selection of a USGS gage station with a minimum of 10 years worth of daily streamflow data closely located to the outfall location.

3. Streamflow conversion and statistical analysis.

For the purposes of this analysis, the proposed outfall location was estimated to be at 38° 7' 17.752" latitude, -78° 12' 10.729" longitude, which corresponds to rivermile 100.18 on the South Anna River. The drainage area for the South Anna River upstream of the proposed outfall location was estimated at 6.08 square miles (3,892.6 acres) using GIS mapping software.

The drainage-area ratio method was selected for this analysis as it is the preferred method for estimating low flow statistics for ungaged sites on streams with gaged records. It assumes that the unit area runoff for the ungaged basin is similar to that of the selected gaged site. This assumption requires that the two sites be closely located and share a similar topography, climate, soil characteristics, and land use. The drainage-area ratio is calculated by dividing the drainage-area at the ungaged site by the drainage-area at the selected gage station. The USGS recommends that the drainage-area ratio of the two sites be between 0.5 and 1.5.

USGS does operate a gage station on the South Anna River however it is located much farther downstream near Ashland, VA, resulting in a drainage-area ratio of 0.01539, outside of the recommended 0.5 to 1.5 range. Of the other two gage stations located near the proposed outfall location (Figure 1), the Contrary Creek station was selected due to its having a drainage-area ratio closer to 1.0 and a more recent period of record compared to Bunch Creek.

The drainage-area ratio was multiplied by the average daily flow for each day in the period of record at Contrary Creek, providing the projected streamflow data used to

calculate the high and low 1Q10, 7Q10, 30Q10, 30Q5 flows, and the harmonic mean flow for the South Anna River at the proposed discharge location (Figure 2).

Potential USGS Gage Stations			
Gage Station	**Period of Record**	**Drainage-Area (m^2)**	**Ratio**
USGS 01670300 Contrary Creek near Mineral, VA	10/01/1975 to 12/31/1986	5.58	1.0896
USGS 01671500 Bunch Creek near Boswell's Tavern, VA	10/01/1948 to 09/30/1979	4.34	1.4009
USGS 01672500 South Anna River near Ashland, VA	10/01/1930 to 10/22/2009	395	0.01539

Figure 1: Potential gage stations and their corresponding drainage areas and drainage-area ratios.

Calculated Flow Statistics (cubic feet/second)		
	High Flow	**Low Flow**
1Q10	348.67	0.04
7Q10	85.81	0.04
30Q10	38.69	0.06
30Q5	38.69	0.06
Harmonic Mean	0.960970777	

Figure 2: Flow statistics in cubic feet/second, calculated for the South Anna River at the proposed discharge location for Klockner Pentaplast of America.